"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

S/026/60/000/010/001/013
A166/A026

AUTHOR: Rebinder, P.A., Academician

TITLE: Physico-Chemical Engineering

PERIODICAL: Priroda, 1960, No. 8, pp. 3-7

TEXT: The author explains the need for physico-chemical engineering and lists some of the problems it is helping to solve. The main task of the new science is to produce materials with certain known qualities and structure: a) by studying deformation and destruction of solid bodies so that the processes of working the materials can be regulated; b) by studing the structural formation to obtain material with definite mechanical properties. Prospects are good in this respect for highly-dispersed material and for material composed of many fibers or films. Sometimes these are solidly interbonded molecularly, and sometimes they are mobile in relation to each other. In new glass ceramics high-temperature treatment produces a mass of fine crystals separated by thin layers of uncrystalized glass. These ceramics are extremely strong and are forgeable within a certain temperature range. Surface-active agents can be used to facilitate machining or to extend the range of pressure casting, which would eliminate much machining. New optimum concrete technology has been devised using finely

Card 1/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

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Physico-Chemical Engineering

ground bonding agent (cement) and a micro-filler (sand), mixed under constant vibration to break down the structural bonds which would otherwise prevent proper mixing and packing. The addition of surface-active plastifiers also prevents premature formation of structural bonds. The concrete requires less water and less cement per cubic meter. It is stronger than standard concretes and permits erection of thin-walled structures of sand concrete without coarse filler of prestressed steel armature. The concrete would also harden more quickly.

Card 2/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

SEGALOVA, Ye.Ye.; KONTOROVICH, S.I.; REBINDER, P.A.

Structuration taking place during the hydration solidification of calcium oxide of various dispersities. Koll.zhur. 22 no.1:74-81 Ja-F 60. (MIRA 13:6)

1. Institut fizicheskoy khimii AN SSSR Otdel dispersnykh sistem i Moskovskiy universitet, Kafedra kolloidnoy khimii.
(Lime)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

KONTOROVICH, S.I., SEGALOVA, Ye.Ye., REBINDER, P.A.

Effect of adding surface active substances upon the development of the crystallization structure of the hardening of variously dispersed calcium oxide. Koll. zhur. 22 no.2:195-200 '60. (MIRA 13:8)

1. Moskovskiy universitet, khimicheskiy fakul'tet, kafedra kolloidnoy khimii i Institut fizicheskoy khimii AN SSSR, Otdel dispersnykh sistem.
(Lime) (Surface active agents)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

KHODAKOV, G.S.; REBINDER, P.A.

Effect of the medium on the processes of dispersion of solids.
Koll.zhur. 22 no.3:365-375 My-Je '60. (MIRA 13:7)

1. Institut fizicheskoy khimii AN SSSR, Otdel dispersnykh sistem i Institut novykh stroitel'nykh materialov AN SSSR, Moskva.
(Dispersion) (Quartz)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

REBINDER, P.A.

"New physical methods for studying peat" edited by M.P. Volarovich, N.V. Churaev. Reviewed by P.A. Rebinder. Koll. zhur. 22 no. 5:641-642 S-O '60. (MIRA 13:10)
(Peat) (Volarovich, M.P.) (Churaev, N.V.)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

REBINDER, P., akademik

Pocket-size books and the wide world. Tekh.mol. 28 no.5:34 '60.
(MIRA 13:7)

(Science) (Technology)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

REBINDER, P.A., akademik

Physicochemical mechanics. Priroda 49 no.10:3-7 O '60. (MIRA 13:10)

(Mechanics)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

S/020/60/132/02/38/067
B004/B007

AUTHORS: Belugina, G. V., Konstantinova, V. V., Zakiyeva, S. Kh., Rebinder, P. A., Academician

TITLE: Investigation of the Gel-forming Ability of Aluminum Oleates in Benzene

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 2, pp. 380-383

TEXT: The authors discuss the behavior of the gels of aluminum soaps of the general composition $Al(OH)_n(OOCR)_m$, where $n + m = 3$. They mention the dependence of the properties of such substances on the number of hydroxyl groups, on the association of the molecules, and on the molecular weight and the type of acid radical. It was the aim of the present paper to investigate the behavior of the aluminum soaps of unsaturated fatty acids on the basis of the example of oleic acid. The aluminum oleates were prepared by the reaction of $Al_2(SO_4)_3$ with an alcoholic solution of sodium oleate at 70°C. From the aluminum oleates gels were formed in pure benzene. The influence exerted by composition on the viscosity η was investigated on 8% gels, which were precipitated in the case of an alkali excess of 25-200%. Fig. 1 shows the dependence of η on the content of free alkali

Card 1/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

after 5, 7, and 30-32 days. η attains a maximum at 50% alkali excess (n = 1), and a second lower maximum in the case of an alkali excess of 150% (n = 1.7). The soap precipitated with alkali excess of 200% was no longer soluble in benzene. Like in the case of saturated fatty acids, bisubstituted aluminum soap (n = 1) of oleic acid had the greatest viscosity. The stability of the gels was low (Fig. 2). This is ascribed to the low chemical stability of unsaturated fatty acids. However, also α-naphthol added as antioxidizing agent does not influence gel aging. This aging does not depend on the composition of the aluminum oleate, which fact distinguishes the Al oleates from the aluminum naphthenates (Fig. 2). Fig. 3a shows the increase of viscosity with increasing concentration of the soap. The dependence $\log\eta = K + a \log C$ (1) was found (K and a = constants, C = concentration). Increasing concentration (Fig. 4) retards the aging process. However, also 12% gels age and are durable for not more than two weeks, whereas 4% gels of aluminum naphthenates remain stable for longer periods. There are 4 figures and 8 references, 4 of which are Soviet.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

SUBMITTED: February 6, 1960

Card 2/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

S/020/60/133/01/19/070
B014/B011

AUTHORS: Kochanova, L. A., Shchukin, Ye. D., Likhtman, V. I., Rebinder, P. A., Academician

TITLE: Origin and Development of Cracks in Deformed Crystals

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 1, pp. 71-73

TEXT: By way of introduction, the authors subdivide the cracking of a crystal on stretching into two stages depending on the course of deformation. In the stage A there occurs a slow formation and a gradual growth of the cracks at sites with high tension; in the stage B the crack quickly extends over the entire cross section of the crystal. The authors discuss the basic role of shear in stage A, and explain the origin of microcracks in this stage by the unification of dislocations and the formation of hollow nuclei. The mechanism of the development of cracks is closely examined, and V. N. Rozhanskiy (Ref. 7) is mentioned in a discussion of the position of the cracks in the lattice. The most probable arrangement is regarded to be the serial arrangement of dislocations in a lattice plane, which develop to

Card 1/2

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Origin and Development of Cracks in Deformed Crystals

S/020/60/133/01/19/070
B014/B011

a crack on further deformation. Formula (1) is given for the length c of a crack, and formula (2) for the normal tension. From these formulas the authors derive the condition for the constancy of the product from normal tension and shear stress; this constancy is well proven by experiments. The authors tested the independence of expression (1) of expression (2). For this purpose they studied the development of cracks in amalgamated zinc single crystals. Microscopic analyses revealed inner cracks in the crystal plane (0001) of all samples. Relation (1) and (2) by Griffith were tested experimentally, and a few relative results are given. The authors state finally that the results obtained by them prove the universal character of the scheme worked out by them for the analysis of a crack development. There are 3 figures and 14 references: 10 Soviet, 3 British, and 1 Japanese.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

SUBMITTED: April 7, 1960

Card 2/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

SEGALOVA, Ye.Ye.; MARKINA, Z.N.; REBINDER, P.A., akademik

Mechanism of the effect of small amounts of electrolytes on the strength of the crystal structure formed by solidification. Dokl.AN SSSR 133 no.3:630-632 Jl '60. (MIRA 13:7)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.
(Electrolytes) (Crystallization) (Calcium sulfate)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

84833

S/020/60/134/005/021/023
B016/B054

18.6200 only 2308, 1497

AUTHORS: Likhtman, V. I., Gorbunov, N. S., Shatalova, I. G., and Rebinder, P. A., Academician

TITLE: On the Solidification by Vibration in Powder Metallurgy

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 5, pp. 1150-1152

TEXT: The application of powder-metallurgical methods is much impeded by the high pressures required for pressing, particularly if the powders are highly disperse. Also the small amounts of surface-active lubricants acting favorably to a certain degree and counteracting the relaxation of elastic stresses (Ref. 1) are unable to encounter the cracking of pressed pieces at high ram pressure. In their investigation, the authors proceeded from the results of application of vibration to the production of building materials (Ref. 2). They present the results of application of vibration to the pressing of various powders used in powder metallurgy. The vibration source used was a mechanical vibrator of the type V-116 (I-116) with a frequency of 14,000 vibrations per minute, and a vibrational

Card 1/3

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84833

On the Solidification by Vibration in Powder Metallurgy

S/020/60/134/005/021/023
B016/B054

for other mixtures. By the methods described, it was possible to eliminate, to a great extent, the difficulties and defects of pressed pieces mentioned at the beginning. The authors thank N. V. Mikhaylov, Doctor of Technical Sciences, for assisting in the work. There are 4 figures and 2 Soviet references.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

SUBMITTED: June 8, 1960

Card 3/3

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

REYTLINGER, Sergey Aleksandrovich; CHEKHOVSKIY, Yuriy Vasil'yevich; MOSKALEV, N.S., kand. tekhn.nauk, retsenzent; REBINDER, P.A., akademik, red.; VAYNER, M.S., red.; RAZUMOVSKAYA, T.Ya., red.; DEMIDOV, Ya.F., tekhn. red.

[Mechanisms of the transmission of gases and liquids through concrete and methods of studying the structure of concrete pores]Mekhanizmy perenosa gazov i zhidkostei cherez beton i metody issledovaniia struktury por betona. Pod red. P.A. Rebindera. Moskva, VNIIST Glavgaza SSSR. Red.-izdatel'skii otdel, 1961. 63 p. (MIRA 15:11)
(Concrete--Testing)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

REBINDER, P.A., akad., red.; BABALYAN, G.A., doktor tekhn. nauk, red.; KRAVCHENKO, I.I., kand. tekhn. nauk, red.; KAYESHKOVA, S.M., ved. red.; POLOSINA, A.S., tekhn. red.

[Use of surfactants in the petroleum industry; proceedings] Primenenie poverkhnostno-aktivnykh veshchestv v neftianoi promyshlennosti; trudy. Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry, 1961. 287 p. (MIRA 14:11)

1. Vsesoyuznoye soveshchaniye po primeneniyu poverkhnostno-aktivnykh veshchestv v neftyanoy promyshlennosti i ikh proizvodstvu, 1st, Baku, 1957. 2. Institut fizicheskoy khimii AN SSSR (for Rebinder). 3. Ufimskiy neftyanoy nauchno-issledovatel'skiy institut (for Babalyan, Kravchenko).
(Surface-active agents) (Petroleum industry)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

39643
S/137/62/000/007/021/072
A052/A101

1 1600

AUTHORS: Gorbunov, N. S., Shatalova, I. G., Likhtman, V. I., Mikhaylov, N. V., Rebinder, P. A.

TITLE: On the vibration method of compression in powder metallurgy

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 7, 1962, 47, abstract 7G325 ("Poroshk. metallurgiya", no. 6, 1961, 10 - 16; English summary)

TEXT: The effect of working pressure on the change of density at a static and vibration (vibrator with a vibration frequency of 14,000 per minute) pressing of powders of Ti, Mo, SiC, B_4C, TiC and WC hard-alloy mixtures was studied. Vibration pressing is especially advantageous for unmoldable powders of refractory compounds. When a vibrator is used the working pressure reduces approximately by two orders of magnitude, which is connected with a better packing of powders. The effect of the time factor and of the height of briquets on the change of density was also studied.

R. Andriyevskiy

[Abstracter's note: Complete translation]

Card 1/1

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

KHODAKOV, G.S.; REBINDER, P.A.

Mechanism of comminution of quartz in surface active media [with summary in English]. Koll.zhur. 23 no.4:482-490 Jl-Ag '61. (MIRA 14:8)

1. Institut fizicheskoy khimii AN SSSR, Otdel dispersnykh sistem i Nauchno-issledovatel'skiy institut novykh stroitel'nykh materialov Akademii stroitel'stva i arkhitektury SSSR.
(Quartz)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

REBINDER, P.A., akademik; MIKHAYLOV, N.V., doktor tekhn.nauk

Scientific bases of the production technology of new materials. (MIRA 14:9)
Vest. AN SSSR 31 no.10:70-77 O '61.
(Technological innovations)
(Materials)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

S/020/61/136/006/021/024
B101/B203

AUTHORS: Summ, B. D., Goryunov, Yu, V., Pertsov, N. V., Shchukin, Ye. D., and Rebinder, P. A., Academician

TITLE: Cracking in a bent zinc plate with local application of a liquid surface-active metal (mercury)

PERIODICAL: Doklady Akademii nauk SSSR, v. 136, no. 6, 1961, 1392-1395

TEXT: The authors deal with the problem of changing the mechanical properties of metals by the action of surface-active metals. The present paper reports on the action of small mercury drops on cracking in a bent zinc plate. Industrial zinc of the thickness = 0.8-3 mm and the width a of up to 50 cm was bent by a force F, as is shown in Fig. 1. In the place of Hg application , the stress p_m was only about 7-8 kg/mm^2 (tensile strength of Zn about 18 kg/mm^2). In the absence of Hg, no considerable residual deformations occurred after 10 min; at a higherload, the zinc could be bent at right angles. If, however, at a p_m of about 7 kg/mm^2, an Hg drop (mass m about 0.2-40 mg) was applied to the zinc surface polished by etching, a crack formed which, in a

Card 1/3

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

short time (1-2 sec), adsorbed the entire Hg, and rapidly extended perpendicularto p_m. The rate of extension decreased gradually, and was already very low after 5-10 min. The crack extended over the greaterpart of its length through the entire thickness of the plate. The final length L of the crack depended on the quantity of Hg. On the basis of concepts of the migration of Hg along the creaked surface and the diffusion of Hg into the cracked surface, the authors derived for the length L:

$L = A^{-2/3} m^{2/3}$ (A = const). This equation was confirmed experimentally. Cracking showed three stages. At the first stage, the rate of cracking is constant and independent of m, the mass of the Hg drop. Hg is adsorbed, and distributed over the crack. With increasing volume of the crack, the Hg is no longer sufficient to fill it. This is the beginning of the second stage. Hg is distributed as a liquid phase only on the crack surface. The Hg migrates to the place of destruction, and diffuses into the crack surface at the same time. At the third stage, no more liquid Hg is present. The slow growth of the slit takes place through migration, the Hg adsorbed on the slit wall being redistributed.

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

20644

S/020/61/136/006/021/024
B101/B203

Cracking in a bent zinc plate with local...

According to the authors' opinion, a detailed analysis of migration and diffusion, and the reduction in strength of metals underthe action of surface-active melts, can be studied by means of such experiments. Furthermore, the kinetics and migration of adsorptive atoms will be studied. There are 4 figures and 4 Soviet-bloc references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov). Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences USSR)

SUBMITTED: November 5, 1960

Card 3/3

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

GRIGOR'YEVA, N.V.; PCHELIN, V.A.; REBINDER, P.A., akademik

Structural and mechanical properties of protein fibers. Dokl. AN SSSR 137 no.4:889-892 Ap '61. (MIRA 14:3)

1. Nauchno-issledovatel'skiy institut mekhovoy promyshlennosti i Moskovskiy gosudarstvennyy universitetim M. V.Lomonosova.
(Proteins)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

24,4200
15 8510

25479
S/020/61/139/001/011/013
B104/B231

AUTHORS: Ivanova, L. V., Chuvayev, V. F., and Rebinder, P. A. Academician

TITLE: Kinetics of conditionally instantaneous elastic deformation of polymers in elastic state

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 1, 1961, 83-86

TEXT: It has been demonstrated in a previous work (Rebinder et al., DAN, 81, 239, (1951)) that the development rate of elastic deformations of such polymers as cannot be determined by the Kelvin relation $d\varepsilon/d\tau = (\varepsilon_m-\varepsilon)/\theta$ (1) depends upon the equation $d\varepsilon/d\tau = aP(\varepsilon_m-\varepsilon)/\varepsilon$ (2). The present study deals with kinetics of the development of a conditionally instantaneous elastic deformation of elastic polymers which are subjected to a constant pressure P. It is shown that the deformation develops according to (2), and that compared to slow elastic deformations there is a difference only so far as the constant a is 8 - 10 times bigger. The device used for the investigations transformed the pure displacement deformation in the test specimen (15 by 7 by 1.5 mm) into an electric signal which was subsequently transmitted to an

Card 1/

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Kinetics of conditionally ...

oscilloscope. The presented oscillograms show that the deformation develops in the same way as it would in case of a slow deformation, only much more rapidly. This permits the relation

$$-\frac{\left(x_m \ln\frac{x_m - x}{x_m} + x\right)^{\frac{1}{b}}}{\tau} = a_1 P, \qquad (3)$$

already established in the previous work, to be used for the calculation. x_m stands here for the absolute limiting displacement value, x denotes the absolute displacement, b the thickness of the displaced layer, and a_1 is a constant. The computed values for polyisobutylene are collected in Table 1. As to fractionated polyisobutylene (molecular weight $6.4 \cdot 10^5$ at 30° C; P = 200 g/cm^2) the following is obtained for a_1: $a_1 = 0.67 \cdot 10^{-4}$ cm^2/dyn sec. Increasing the temperature causes the time of development of the deformation to be reduced, and at 80°C it is fully within such period of time as - due to the inertia of the test arrangement - is necessary for the displacement

Card 2/7

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

to attain $x_m = 66 \cdot 10^{-4}$ cm. Instead of the characteristic monotone asymptotic development of the deformation, an oscillation occurs about a position of equilibrium (Fig. 3). Relations

$$x_t = [x_m (1 - e^{-\gamma t} \cos \delta t), \quad \gamma = \frac{B}{2m}, \quad \delta t = \sqrt{\frac{B^2}{4m^2} - \frac{k}{m}}. \qquad (7)$$

are derived which describe the curve shown in Fig. 3. The required characteristic $\eta \approx 1/a_1$ is determined from the amplitude damping (Table 2). Moreover, a linear relation between $\log(1/a_1)$ and $1/T$ was established. (Fig. 4). There are 4 figures and 2 references: 1 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry Academy of Sciences USSR)

SUBMITTED: March 28, 1961

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

GRIGOR'YEVA, N.V.; PCHELIN, V.A.; REBINDER, P.A.; akademik

Effect of tanning agents on the structure of gelatin solutions. Dokl. AN SSSR 139 no.6:1403-1404 Ag '61. (MIRA 14:8)

1. Nauchno-issledovatel'skiy institut mekhovoy promyshlennosti pri Vserossiyskom Sovete Narodnogo Khozyaystva RSFSR i Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Tanning) (Gelatin)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

FILATOVA, M.A.; NIKITINA, S.A.; TAUBMAN, A.B.; REBINDER, P.A., akademik

Demulsifying effect of surface active agents and the structural and mechanical properties of their adsorption layers. Dokl. AN SSSR 140 no.4:874-876 O '61. (MIRA 14:9)

1. Institut fizicheskoy khimii AN SSSR.
(Surface active agents) (Emulsions)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

BABALYAN, Grigoriy Avetisovich; KRAVCHENKO, Ivan Ivanovich; MARKHASIN, Il'ya L'vovich; RUDAKOV, Georgiy Vasil'yevich; REBINDER, P.A., akademik, red.; KAYESHKOVA, S.M., ved. red.; FEDOTOVA, I.G., tekhn. red.

[Physicochemical bases for using surfactants in developing oil formations]Fiziko-khimicheskie osnovy primeneniia poverkhnostno-aktivnykh veshchestv pri razrabotke neftianykh plastov. [By] G.A.Babalian i dr. Moskva, Gostoptekhizdat, 1962. 282 p. (MIRA 15:9)

(Surface-active agents)
(Oil reservoir engineering--Equipment and supplies)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

LIKHTMAN, Vladimir Iosifovich; SHCHUKIN, Yevgeniy Dmitriyevich; REBINDER, Petr Aleksandrovich, akademik, otv. red.; YEGOROV, N.G., red.; YEPIFANOVA, L.V., tekhn. red.; RYLINA, Yu.V., tekhn. red.

[Physicochemical mechanics of metals; adsorption phenomena in processes of deformation and metal failure]Fiziko-khimicheskaia mekhanika metallov; adsorbtsionnye iavleniia v protsessakh deformatsii i razrusheniia metallov. Moskva, Izd-vo Akad. nauk SSSR, 1962. 302 p. (MIRA 15:10)
(Physical metallurgy)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

S/025/62/000/008/001/002
D290/D307

AUTHORS: Pertsov, N.V., Candidate of Chemical Sciences, and Rebinder, P.A., Academician

TITLE: Destruction - the road towards strengthening of materials

PERIODICAL: Nauka i zhizn', no. 8, 1962, 24 - 32

TEXT: The authors discuss the effect of surface adsorption of various substances on the strength of materials, and describe the way in which the strength of a solid can be reduced by the adsorption of lubricants or of fusible alloying of metals which are intended to facilitate working of the alloy. Results have shown that an alloy is weakened only if the fusible metal is sparingly soluble in the refractory metal; therefore the solubilities of fusible metals in refractory metals are being systematically studied. The possibility of producing strong new alloys by using surface-active fusible metals as a means of binding together powdered refractory metals is also being

Card 1/2

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

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S/659/62/008/000/015/028
I048/I248

AUTHORS: Gorbunov, N.S., Shatalova, I.G., Likhtman, V.I., and Rebinder, P.A.

TITLE: Investigation of the vibration compacting of powdered metals and their compounds

SOURCE: Akademiya nauk SSSR. Institut metalurgii, Issledovaniya po zharoprochnym splavam. v.8. 1962. 103-110

TEXT: The vibratory compacting of various metal, carbide, nitride, boride, and metal-carbide powders was studied on the I-116 vibrator, at a frequency of 14000 vibrations/min. The vibratory compacting of materials having elastic moduli above 25000 kg./sq.mm. (e.g., Mo, TiC, WC, TiB_2, Co+WC) yielded products with a density equal to or higher than that obtained under static loads of 1200 kg./sq.cm.; the pressure applied during the vibratory compacting was 20 kg./sq. cm. In some cases densities higher than the density produced by any other method were obtained through the use of the vibration method,

Card 1/2

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I048/I248

Investigation of the vibration...

e.g., 9 g./cc in the case of WC+3% Co. However, vibratory compacting was inferior to the conventional static pressure method when applied to materials with elastic moduli below 25000 kg./sq.mm. (e.g., Co, Cr). The density of vibration-compacted products increased with time under load and generally reached a constant value after about 25 secs. In all cases the density increased with increasing pressure. The final density was affected by the nature and amount of liquid wetting agent used, e.g., a 6% aq. solution of glycerine gave better results than water alone, the optimum amount of the glycerine solution being 6.5% by wt. of the powder. The density increased with increasing kinetic moment of the vibrations (within the range 0.065-0.35 kg.cm.). There are 5 figures and 3 tables.

Card 2/2

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

REBINDER, P.A., akademikus (Szovjetunio); MIHAJLOV, N.V. [Mikhaylov, N.V.] (Szovjetunio)

Physicochemical mechanics. Technika 6 no.10:2 O '62.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

13801

S/069/62/024/006/005/009
B101/B180

AUTHORS: Zakiyeva, S. Kh., Belugina, G. V., Konstantinova, V. V., Rebinder, P. A.

TITLE: Effect of the solid disperse phase content on the limiting viscosity of concentrated suspensions in a structurized medium

PERIODICAL: Kolloidnyy zhurnal, v. 24, no. 6, 1962, 678 - 681

TEXT: The aging of a suspension of aluminum (particle size, 6 - 13μ) dispersed in a purified paraffin-naphthene fraction, thickened with 2% by weight of aluminum naphthenate, was investigated for φ the solid disperse phase content, which ranged from 5 to 31% by volume. Measurements were made of η_0 the limiting viscosity of the medium and of $\eta_\varphi = \eta_0 \cdot K(\varphi)$ the limiting viscosity of the suspension, where $K(\varphi)$ is the relative viscosity of the suspension dependent on φ. An investigation of η_0 and η_φ as dependent on age showed that within 21 days the η_φ's of suspensions with φ = 5 - 23% dropped to the same value as the η_φ of the unfilled gel. This means that the particles of the solid disperse phase did not form any

Card 1/2

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additional coagulation structure. For more strongly aged gels with lowered η_0 values, $K(\varphi)$ is higher in the low φ range (up to 23%), and lower at higher φ (31%). At φ = 31% the particles of the disperse phase begin to act as an active filler. The fact that the $K(\varphi)$'s of all highly structuralized media, i.e. gels with $\eta_0 > 115$ poises, is independent of η_0 up to φ = 23 - 27% suggests that the suspension is completely stabilized. There are 2 figures.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR, Moskva (Institute of Physical Chemistry of the AS USSR, Moscow)

SUBMITTED: July 12, 1962

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

VLODAVETS, I.N., kand.khim.nauk; ~~REBINDER, P.A.~~, akademik

Porous materials on the basis of condensation structures. (MIRA 15:11)
Vest. AN SSSR 32 no.11:80-87 N '62.
(Porous materials)
(Condensation products (Chemistry))

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

34754
S/020/62/142/003/022/027
B101/B110

15.9130

AUTHORS: Yampol'skiy, B. Ya., Wu Shu-ch'iu, and Rebinder, P. A., Academician

TITLE: Mechanism of structure formation in hydrocarbon suspensions of carbon black in connection with the problem of active rubber fillers

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 3, 1962, 633-636

TEXT. The effect of temperature, admixtures of polymers or surface-active substances on the structure formation was studied on suspensions of lamp black type A (A) in nonpolar vaseline oil. The experiments were conducted 3 hrs after preparing the suspension, as soon as the specific electrical conductivity had attained its maximum, λ_m. The volt-ampere curves for d.c.voltages of 0.01 - 100 v (potential V = 0.025 - 250 v/cm) were plotted. In 10% carbon black suspension and at 20°C, the electrical conductivity remained constant with small and high V only. At V< 0.1 v, $\lambda_m \approx 2 \cdot 10^{-7}$ ohm^{-1}·cm^{-1}. With increasing V, λ_m increases rapidly (≈ 30fold)

Card 1/3

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Mechanism of structure formation in...

and attains the value $\approx 6 \cdot 10^{-6}$ ohm^{-1} · cm^{-1} at V > 60 v. At 40°C, this course is even more distinct. The curves log I = f(log V) are S-shaped. They follow the equation $I = cV^n$ for low and high V (n = 1) only. In the inflection point, $n = \Delta \log I / \Delta \log V$ is 2 at 20°C, and 3 at 40°C. The coagulation structure of carbon black suspensions shows thixotropy. Destruction of the structure by shaking or mixing causes an immediate drop of λ. When standing at rest, structure formation takes place again. The limit shear stress of the structure can be accurately determined from the drop of λ in elastoplastometers of the Shvedov type with coaxial cylinders. In 30% carbon black suspensions in xylene it was found that the electrical conductivity increased during xylene evaporation due to structure formation, and dropped again during adsorption of xylene vapor. The experiment may be repeated several times (Fig. 3). Since suspensions of 30 - 40% carbon black have a low specific electrical conductivity ($\lambda_0 \sim 10^{-5}$ ohm^{-1} cm^{-1}) it is assumed that fluid interlayers are preserved between the carbon black particles which are thinner (10^{-7} - 10^{-8} cm) on the active (oxidized) portions of carbon black particles, so that the electrons can pass through (λ = const). With increasing V, the thicker fluid interlayers also become permeable to electrons, so λ increases.

Card 2/4

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

Mechanism of structure formation in...

Small admixtures of surface-active substances strongly reduce λ: in a 10% carbon black suspensions, λ dropped to 1/10 of the initial value after adding 0.05% oleic acid. Coagulation is hindered in this connection. Small admixtures of adsorbable polymers also reduce λ and the strength of the coagulation structure. This, however, permits the admixture of large amounts of active filler favoring the development of the polymer (rubber) structure. Ye. D. Shchukin is mentioned. There are 3 figures and 8 references: 7 Soviet and 1 non-Soviet. The two references to English-language publications read as follows: A. Voet, Am. Ink Maker, 35, no. 4 (1957); Disc. Farad. Soc. 18, 151 (1954).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: October 10, 1961

Card 3/4

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

AMELINA, Ye.A.; SEGALOVA, Ye.Ye.; REBINDER, P.A., akademik

Characteristics of solidification processes involved in the formation of crystal structure in semihydrated gypsum suspensions at 20° and 60°. Dokl. AN SSSR 142 no.4:884-886 F '62. (MIRA 15:2)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova i Institut fizicheskoy khimii AN SSSR.
(Gypsum)
(Crystallization)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

15 9050

39580
S/020/62/145/003/012/013
B101/B144

AUTHORS: Vlodavets, I. N., and Rebinder, P. A., Academician

TITLE: Structuration by condensation used as a method of producing porous polymer material

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 3, 1962, 617-620

TEXT: The formation of condensation structures is discussed: threedimensional networks of intergrown and interwoven particles of a new phase, which form in oversaturated solutions or melts. Experiments were made with a mixture of polyvinyl alcohol (PVA), formaldehyde, and sulfuric acid solutions. Initially turbidity and viscosity were found to increase linearly. Mechanical influences reduced the viscosity by destroying the structure. Insufficiently acetalized systems separated from aldehyde and acid by washing, preserved their microheterogeneity only when moist lost it when dried and regained it when soaked in water. Long-term treatment of PVA with formaldehyde and acid yielded structures which did not lose their porosity by drying. Polyvinyl formal films with differences in porosities, transparency, and mechanical properties may be obtained by changing the

Card 1/2

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B101/B144

Structuration by condensation ...

concentration of components, the temperature, and the time of reaction. Considerable supersaturation yielded systems with surfaces up to 60 m^2/g. Slight supersaturation yielded coarse structures visible at slight magnification. Such polymer networks may be used for the production of perfect artificial leather with high permeability to water vapor, moderate permeability to air, and high bending strength. Additional molding, stretching, vulcanization, tanning, plasticizing, etc. may be necessary to produce films of the desired properties. There are 2 figures. The English-language reference is: J. H. Highberger, R. A. Whitmore, Pat. USA, no. 2934446, April 26, 1960.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences USSR)

SUBMITTED: March 26, 1962

Card 2/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

TULOVSKAYA, Z.D.; SEGALOVA, Ye.Ye.; REBINDER, P.A., akademik

Temperature dependence of the metastable solubility of monocalcium aluminate. Dokl. AN SSSR 147 no.1:153-154 N '62. (MIRA 15:11)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.

(Calcium aluminate)
(Solubility)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

AMELINA, Ye.A.; SEGALOVA, Ye.Ye.; REBINDER, P.A., akademik

Induction period of structure formation in the solidification of hemihydrated gypsum. Dokl. AN SSSR 147 no.2:392-394 N '62. (MIRA 15:11)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova i Institut fizicheskoy khimii AN SSSR.
(Gypsum)
(Crystallization)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

ESHER, Revekka Naumovna; REBINDER, P.A., akademik, red.; LEVINA, Ye.S., ved. red.; VORONOVA, V.V., tekhn. red.

[Production and use of lubricating and cooling fluids (for metal cutting)] Proizvodstvo i primenenie smazochno-okhlazhdaiushchikh zhidkostei (dlia obrabotki metallov rezaniem). Izd.3., perer. i dop. Pod red. P.A. Rebindera. Moskva, Gostoptekhizdat, 1963. 225 p. (MIRA 16:12)

(Metalworking lubricants)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

S/063/63/008/002/007/015
A057/A126

AUTHOR: Rebinder, P.A., Academician

TITLE: Formation and mechanical properties of dispersed structures. On the physico-chemical mechanics of silicate dispersions

PERIODICAL: Zhurnal vsesoyuznogo khimicheskogo obshchestva imeni D.I. Mendeleyeva, v. 8, no. 2, 1963, 162 - 170

TEXT: The author presents a thorough discussion of dispersed structures and their properties effecting various building materials. The discussion is based on data obtained partly by the author and his coworkers and by other investigators. The difference between the two main groups of dispersed systems - the non-structurized and structurized dispersions - is the presence, or absence of a non-oriented space lattice. The author investigated in an earlier work characteristics and mechanical properties of spatial structures in dispersed systems - coagulated, condensed, and crystallized structures - in connection with the generation and development of strength of structurized dispersion, solid bodies, and construction materials. If the particles show a high anisometry,

Card 1/2

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

Formation and mechanical properties of ....

the coagulated structures will have elastic properties according to observations made by N.N. Serb-Serbina et al., and by L.A. Abduragimova and N.M. Muradov. A theoretical explanation was given by Ye.D. Shchukin. Total homogenization effecting the densest coagulated and coagulated-crystallized structures without inner tensions is the basic problem in cement technology and ceramics. The author mentions papers by others on the following subjects: Rheological properties of thixotropic coagulated structures; the strengthening of polymers by addition of active fillers and formation of coagulated cross-linked structures; the adsorptive stabilization of fillers and an optimum activation observed at incomplete adsorptive covering; condensation and crystallization structures originating from a metastable medium during the formation of a new solid phase. There are 10 figures.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

REBINDER, P.A., akademik; VYAKHIREV, D.A., doktor khimich. nauk

"Gas chromatography" by A.A.Zhukhovitskii, M.N.Turkel'taub. Reviewed by P.A.Rebinder and D.A.Viakhirev. Zav.lab. 29 no.8: 1023 '63. (MIRA 16:9)

(Gas chromatography)
(Zhukhovitskii, A.A.)
(Turkel'taub, M.N.)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

L 12627-63 EWP(j)/EWT(m)/BDS AFFTC/ASD Pc-4 RM

ACCESSION NR: AP3002881 S/0020/63/150/005/1087/1090

AUTHOR: Sinitsy*na, G. M.; Vlodavets, I. N.; Rebinder, P. A. 59

TITLE: Fixation of condensation structure porosity from synthetic polymers

SOURCE: AN SSSR. Doklady*, v. 150, no. 5, 1963, 1087-1090

TOPIC TAGS: fixation, porosity, synthetic polymer, fibrous-porous condensing structure, hydrophobization, synthetic leather, tanning

ABSTRACT: The fixing processing of fibrous-porous condensing structures leads to their supplementary partial hydrophobization, and increases stability to action of capillary pressure during drying. These experimental results are of significance in attempts to develop synthetic leather. Further study of the nature of such fixing treatment of various high molecular structures is indicated both to realize all possibilities present in such synthetic structures and for further progress in the study of physical-chemical processes of tanning of natural leather. Orig. art. has: 4 figures.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry, Academy of Sciences SSSR)

SUBMITTED: 19 Mar 63 DATE ACQ: 15 Jul 63 ENCL: 00

SUB CODE: 00 NO REF SOV: 006 OTHER: 000

CARD 1/1

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

ACC NR: AP7008695 SOURCE CODE: UR/0020/67/172/005/1137/1140

AUTHOR: Portsov, A. V.; Goryunov, Yu. V.; Portsov, N. V.; Shchukin, Yo. D.; Rebinder, P. A.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Fine pulverization of metals in the presence of strongly adsorption-active metallic melts

SOURCE: AN SSSR. Doklady, v. 172, no. 5, 1967, 1137-1140

TOPIC TAGS: gallium, zinc, powder metal production, molten metal

ABSTRACT: On the basis of the assumption that the mechanical dispersion of solid metals should be accelerated in the presence of adsorption-active metallic melts, the pulverization of solid zinc in the presence of liquid gallium was studied. It was noted that quenched zinc alloys containing 1-6% Ga are converted after 5 min of pulverization into a powder with a particle size from one to several tens of microns. At higher Ga concentrations the pulverization ceased because a paste was formed. To prevent this, the particles formed by the pulverization were stabilized with butyl acetate. Gallium was found to speed up the pulverization and decrease the size of the particles formed. The effectiveness of its action (i. e., the decrease of the work of dispersion) was evaluated by determining the specific surface of the powder

Card 1/2 UDC: 541.18.053 : 546.3 + 532.6

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

ACC NR: AP7008695

formed as a function of time on the basis of sedimentation analysis. It was found that the introduction of even 1% Ga into zinc causes a 200-fold decrease of the work of dispersion. For the alloy with 10% Ga, the maximum surface is 0.3 m^2/g, which corresponds to a mean particle size of about 1.5 μ. Gallium also accelerates the pulverization of tin, cadmium, aluminum and bismuth. It is expected that the proposed method of preparing metal powders (fusion with small amounts of an adsorption-active metal followed by pulverization in a stabilizing medium) will find broad applications, especially in powder metallurgy. Orig. art. has: 3 figures.

SUB CODE: 11/ SUBM DATE: 14Apr66/ ORIG REF: 006/ OTH REF: 004

Card 2/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

ACC NR: AP6011436 SOURCE CODE: UR/0020/66/167/004/0873/0875

AUTHOR: Polyakov, N. V.; Mikhaylov, N. V.; Rebinder, P. A. (Academician)

ORG: Institute of Physical Chemistry, Academy of Sciences SSSR (Institut fizicheskoy khimii Akademii nauk SSSR)

TITLE: The influence of vibration on plastic deformation of metal

SOURCE: AN SSSR. Doklady, v. 167, no. 4, 1966, 873-875

TOPIC TAGS: lead, plastic deformation, metal deformation, vibration stress, vibration analysis

ABSTRACT: In a series of experiments designed to determine the influence of application of simultaneous deformation and vibrating forces on the plastic deformation of metal, metal samples were deformed by the simultaneous application of static compressive force and vibration (frequencies of 10—40 cps with vibration amplitude 0.6 mm, and 15—90 cps with amplitude 0.15 mm). Some experiments were performed with the simultaneous application of two superimposed frequencies: 40 cps with amplitude 0.6 mm, and a superimposed variable frequency from 40 to 90 cps with amplitude 0.15 mm). Lead was chosen as an experimental metal, since room temperature (20C) is a hot-working temperature for this metal.

Card 1/2 UDC: 539.378

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

ACC NR: AP6011436

Graphs of the kinetics of deformation were produced by an oscillograph. The investigations showed that the vibrational field intensified the process of plastic deformation. The resistance to deformation decreased, and the relative deformation increased by several times without disruption of the surface of the sample. An analysis indicated that increasing frequency of vibration caused an increase in the deformation and a reduction in the specific resistance to deformation. Increasing the amplitude of the vibration intensified the effect still further. At frequencies of 80—90 cps, frequency begins to play the most important role; at these frequencies, the surface of the sample showed smoothness characteristic of samples deformed without stress concentrations. Internal stresses are also distributed more evenly. Orig. art. has: 1 table and 3 figures.

SUB CODE: 20,11/ SUBM DATE: 10Aug65/ ORIG REF: 008

Card 2/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

L 27826-66 EWT(m)/EWP(w)/EWP(k)/T/EWP(t)/ETI IJP(c) JD/HW/DJ

ACC NR: AP6015612 (N) SOURCE CODE: UR/0020/66/168/002/0328/0331

AUTHOR: Kanayev, A. A.; Veyler, S. Ya.; Likhtman, V. I.; Rebinder, P. A. (Academician)

ORG: Institute of Physical Chemistry, AN SSSR (Institut fizicheskoy khimii AN SSSR)

TITLE: Relaxation phenomena in metal plastic deformation under friction

SOURCE: AN SSSR. Doklady, v. 168, no. 2, 1966, 328-331

TOPIC TAGS: metal deformation, plastic deformation, stress relaxation, lubricant surface active agent

ABSTRACT: The relaxation phenomena in metal specimens, a copper rod 10.6 mm in diameter drawn through a die 10 mm in diameter, and a copper ball 9.6 mm in diameter calibrated (i.e., forced through a tube 9 mm in diameter) have been studied. The deformation was done with and without surface-active and nonsurface-active (copper oleate, vaseline and a mixture of vaseline + 3% oleic acid) lubricants. Results showed that surface-active lubricants intensify relaxation processes in the surface layers of the deformed metal and that their effect on the relaxation kinetics depends on the stress state of the surface layer. Surface-active lubricants accelerate relaxation in drawing (compared with dry drawing). In dry calibration, practically no metal relaxation occurs. In this case, surface-active lubricants activate the relaxation and reduce residual stresses. In prolonged holding of the specimens under stress (about 200 hr) in both drawing and calibration, the axial stress (the pulling or

Card 1/2 UDC: 531.44+539.621

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

L 27826-66

ACC NR: AP6015612

pushing force), under the action of relaxation, decreases to a certain minimum stress, which depends on the conditions at the contact surfaces. This minimum stress corresponds to a minimum shear stress required for shear plastic deformation in the friction layer. The normal pressure on the die wall also slightly decreases, with the decrease approximating the relaxation curve. Orig. art. has: 3 figures. [MS]

SUB CODE: 11/ SUBM DATE: 09Feb66/ ORIG REF: 004/ ATD PRESS: 5003

Card 2/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

REBINDER, P.A., akademik

Ways of development of the physicochemical mechanics of materials.
Fiz.-khim. mekh. mat. 1 no.1:5-6 '65. (MIRA 19:1)

1. Kafedra kolloidnoy khimii Moskovskogo gosudarstvennogo universiteta i Institut fizicheskoy khimii AN SSSR.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

REBINDER, P.A., akademik; LIKHTMAN, V.I., prof., doktor fiz.-matem. nauk

Reviews and bibliographies. Fiz.-khim. mekh. mat. 1 no.1:
114-115 '65. (MIRA 19:1)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

L 10771-66 EWT(m)/EPF(n)-2/T/EWP(t)/EWP(z)/EWP(b)/EWA(c) IJP(c) JD/WW/HW/JG

ACC NR: AP5027140 SOURCE CODE: UR/0126/65/020/004/0555/0560

AUTHOR: Kochanova, L. A.; Zanozina, Z. M.; Shchukin, Ye. D.; Likhtman, V. I.; Rebinder, P. A.

ORG: Institute of Physical Chemistry AN SSSR (Institut fizicheskoy khimii AN SSSR)

TITLE: Use of emulsification for refining the structure of alloys with a limited solubility of components in the liquid state

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 4, 1965, 555-560

TOPIC TAGS: alloy, alloy structure, structure refining, alloy emulsification

ABSTRACT: An attempt has been made to refine the structure of alloys whose components have a limited solubility in the liquid state by emulsification, i.e., vibration applied at temperatures above the liquidus curve. The experiments were carried out with Zn-Pb-Sn alloys melted from components of no less than 99.99% purity. The crucible containing 40 g of molten alloy metal was heated to a temperature 50—100C higher than that of "layering" and subjected to intensive vibration, then cooled to a temperature below that of layering, held for 30 min, again subjected to vibration and water cooled. It was found that this treatment produced a fine-grained alloy structure, especially when final vibration was applied at 400—600C. This opens the possibility of using colloid chemistry in the field of metal science to control the structure of alloys. The experiments should be expanded to higher melting alloys

Card 1/2 UDC: 548.5

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

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L 10771-66

ACC NR: AP5027140

such as Cu-Co, Cu-Mo, Cu-Cr, using nickel and iron as the third component in order to lower the interphase tension. Orig. art. has: 4 figures. [AZ]

SUB CODE: 11/ SUBM DATE: 20Oct64/ ORIG REF: 003/ OTH REF: 002/ ATD PRESS: 4168

Card 2/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

KOCHANOVA, L.A.; ZANOZINA, Z.M.; SHCHUKIN, Ye.D.; LIKHTMAN, V.I.; REBINDER, P.A.

Using the emulsification occurring in the demixing of molten metals to refine the structure of alloys. Fiz. met. i metalloved. 20 no.4:555-560 O '65. (MIRA 18:11)

1. Institut fizicheskoy khimii AN SSSR.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

REBINDER, P.A.; ZHUKHOVITSKIY, A.A.; CHMUTOV, K.V.

N.M.Turkel'taub, 1915-1965; an obituary. Zhur.fiz.khim. 39 no.7:1804 Jl '65. (MIRA 18:8)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

LYUBIMOVA, T.Yu.; REBINDER, P.A., akademik

Some features of the crystallization setting of cements in the zone of contact with various solid phases (fillers). Dokl. AN SSSR 163 no.6:1439-1442 Ag '65. (MIRA 18:8)

1. Gosudarstvennyy vsesoyuznyy dorozhnyy nauchno-issledovatel'skiy institut i Institut fizicheskoy khimii AN SSSR.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

UR'YEV, N.B.; MIKHAYLOV, N.V.; REBINDER, P.A., akademik

Structure-forming role of solid surfaces in the process of cementing by aqueous suspensions of cement. Dokl. AN SSSR 164 no.3:626-628 S '65. (MIRA 18:9)

1. Institut fizicheskiy khimii AN SSSR.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

SEGALOVA, Ye.Ye.; TIKHONOVA, T.D.; BRUTSKUS, T.A.; SPRINGER, P.A.

Phase transitions of hydrates formed by the hydration of calcium aluminates ($CaO.Al_2O_3$ and $3CaO.Al_2O_3$). Zhur. prikl. khim. 37 no.6: 1227-1233 Je '64. (MIRA 18:3)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

[illegible]

Physicochemical properties of [illegible]
Dokl. AN SSSR 101 no.6:1085-1087 Ag '55. (MLRA 8:9)

1. Moskovskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

SHABANOVA-ANELINA, Ye.A.; SEGALOVA, Ye. Ye.; REBINDER, P.A.

Effect of the dispersity on the ultimate strength of hardening structures as dependent on the dissolution of the initial binding material. Koll.zhur. 25 no.3:370-374 My-Je '63. (MIRA 17:10)

1. Khimicheskiy fakul'tet Moskovskogo universiteta i Otdel dispersnykh sistem Instituta fizicheskoy khimii AN SSSR.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

MARKINA, Z.N.; TSIKURINA, N.N.; KOSTOVA, N.Z.; REBINDER, P.A.

Surface activity of some soaplike semicolloids in relation to micelle formation in their aqueous solutions. Koll. zhur. 27 no.2:242-249 Mr-Ap '65. (MIRA 18:6)

1. Moskovskiy universitet khimicheskiy fakul'tet.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

SIL'CHENKO, L.A.; MIKHAYLOV, N.V.; REBINDER, P.A., akademik

Selecting the optimum time of concrete curing previous to hydrothermal treatment. Dokl. AN SSSR 162 no.6:1342-1345 Je '65. (MIRA 18:7)

1. Institut fizicheskoy khimii AN SSSR.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

SHCHUKIN, Ye.D.; ZANOZINA, Z.M.; KOCHANOVA, L.A.; LIKHTMAN, V.I.; REBINDER, P.A., akademik

Possible preparation of finely dispersed structures in alloys by hardening their emulsions. Dokl. AN SSSR 160 no.6:1355-1357 F '65. (MIRA 18:2)

1. Institut fizicheskoy khimii AN SSSR.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

SHABANOVA, Ye.A.; SEGALOVA, Ye.Ye.; REBINDER, P.A., akademik

Effect of electrolytes on the process of crystallizing structure formation (solidification) in hemihydrate gyp[illegible] suspensions. Dokl. AN SSSR 161 no.2:403-405 Mr '65. (MIRA 18:4)

1. Moskovskiy gosudarstvennyy universitet im. M V.Lomonosova i Institut fizicheskoy khimii AN SSSR.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

ACCESSION NR: AT4014057 S/3072/63/000/000/0005/0030

AUTHOR: Korbut, V. M.; Veyler, S. Ya.; Likhtman, V. I.; Rebinder, P. A.

TITLE: Physicochemistry of the lubricating effect during wire drawing

SOURCE: Fiz.-khim. zakonomernosti deystviya smazok pri obrabotke metallov davleniyem. Moscow, Izd-vo AN SSSR, 1963, 5-30

TOPIC TAGS: metal lubrication, wire drawing lubrication, wire drawing, lubricant

ABSTRACT: The physicochemistry of the lubrication process is a very significant problem in the pressure treatment of metals. This problem was discussed and evaluated on the basis of: (1) effect of the media on the process of metal deformation, (2) mechanism of the lubrication effect on pressure treatment (deformation) of metals, (3) the effect of the temperature during pressure treatment and the physicochemical properties of the lubricant during wire drawing, and (4) the effect of the amount of lubricants used. It was concluded that the stresses of the treatment and the shearing strength in the thin surface layer determine the properties of the lubricant. In some cases, the surface properties of the treated metal are also of significance. Some lubricants react chemically

Card 1/2

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ACCESSION NR: AT4014057

with the treated metal. For example, as a result of the process of wire drawing of aluminum in the presence of liquid-cooling lubricants, water stains or spots are formed. Dark spots are also formed during wire drawing with dry soap powder or by lubrication with liquid salt solution at 100C. In the presence of distilled water, no water stains are formed. It was proved that formation of dark water stains on aluminum alloys can be prevented by applying lubricants based on a kerosene emulsion but the stresses due to wire drawing are not reduced by this lubricant. These lubricants proved highly valuable during rolling of aluminum but not during the process of wire drawing. The addition of calcium stearate or aluminum stearate markedly reduced the stress of wire drawing of aluminum alloys. Positive results in the drawing of aluminum wire have been obtained under technological conditions by applying a lubricant consisting of kerosene emulsion with calcium stearate. Orig. art. has: 13 figures and 9 tables.

ASSOCIATION: None

SUBMITTED: 00	DATE ACQ: 19Dec63	ENCL: 00
SUB CODE: MM	NO REF SOV: 077	OTHER: 006

Card 2/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

[illegible], [illegible]; [illegible], [illegible]; [illegible], [illegible]; [illegible], akademik

Decrease of the surface tension of solid metals when atoms of surface-active metallic melts are adsorbed on their surface. Dokl. AN SSSR 160 no.4:867-870 F '65.

(MIRA 18:2)

1. Institut fizicheskoy khimii AN SSSR.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

L 43214-65 EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD 20 19 8
ACCESSION NR: AP5007664 S/0020/65/160/006/1355/1357

AUTHOR: Shchukin, Ye. D., Zanozina, Z. M., Kochanova, L. A., Likhtman, V. I., Rebinder, P. A. (Academician)

TITLE: The possibility of preparing alloys with a highly dispersed structure by hardening alloy emulsions

SOURCE: AN SSSR. Doklady, v. 160, no. 6, 1965, 1355-1357, and insert facing p. 1333

TOPIC TAGS: alloy structure, dispersed alloy, alloy emulsion hardening, zinc alloy, lead alloy, tin alloy, cast alloy 15 27 21 27

ABSTRACT: The authors studied the possibility of controlling the structural dispersion of a solid prior to its formation from an emulsion with low interphase tensions, using the Zn-Pb-Sn system as a convenient, readily melting, model (see Fig. 1 of the Enclosure). Samples with $\geq$ 99.99% Zn, Pb and Sn and having a combined weight of 40 g were intensively mixed by vibration, and heated, in tightly closed, cylindrical 70 x 20 mm steel crucibles, to temperatures 50-100C higher than that of the liquid-phase stratification region. Then the temperature was reduced to a selected point (T_1) within the stratification region. After maintaining the temperature for half an hour to achieve equilibrium the crucibles were cooled at a rate of

Card 1/3

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

L 43214-65
ACCESSION NR: AP5007664

15C/sec to the ambient temperature and cut along the cylinder generatrices. The metallographic sections, prepared by electrolytic etching from the halves of the casts, were then examined with an MIM-8 microscope. The different structural patterns obtained in several series of experiments, by varying T1, the concentration of and the ratio between the components, are believed to indicate a possibility of effectively controlling structural patterns by this method. Orig. art. has: 4 figures.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Physical Chemistry Institute, Academy of Sciences, SSSR)

SUBMITTED: 26Sep64 ENCL: 01 SUB CODE: MM

NO REF SOV: 002 OTHER: 002

Card 2/3

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

L 43214-65
ACCESSION NR: AP5007664

ENCLOSURE: 01

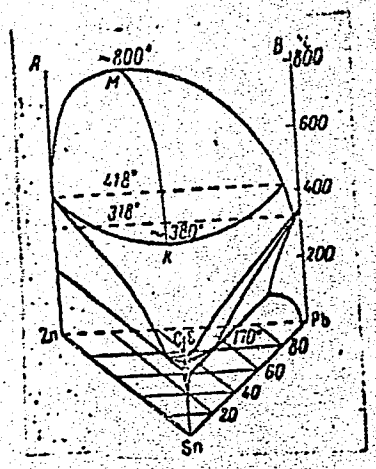

Fig. 1. Phase diagram of the Zn-Pb-Sn system.

Card 3/3

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

REBINDER, P.A., akademik

New technology of disperse materials; some applications of physicochemical mechanics. Vest. AN SSSR 34 no.8:48-58 Ag '64. (MIRA 17:12)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

USHAKOVA, I.N.; MIKHAYLOV, N.V.; REBINDER, P.A.

Effect of the water content, microfillers, and surface-active agents on the disperse structure of the framework of sand concrete. Koll. zhur. 26 no.6:713-721 N-D '64 (MIRA 18:1)

1. Institut fizicheskoy khimii AN SSSR, Moskva.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

NIKOLAYEV, Boris Aleksandrovich; REBINDER, P.A., akademik, retsenzent; VOLARKOVICH, K.P., prof., retsenzent; ILICHOV, G.S., prof., retsenzent; GRYUNER, V.S., prof., retsenzent; SHVETSOV, V.G., red.

[Measurement of the structural and mechanical properties of food products] Izmerenie strukturno-mekhanicheskikh svoistv pishchevykh produktov. Moskva, Ekonomika, 1964. 222 p. (MIRA 18:3)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

SOLOMCHENKO, N.Ya.; SERB-SERBINA, N.N.; REBINDER, P.A., akademik

Mutual adsorption of polyacrylamide and a cation-active substance imparting hydrophobicity on the surface of kaolin. Dokl. AN SSSR 158 no.3: 699-701 S '64. (MIRA 17:10)

1. Institut fizicheskoy khimii AN SSSR.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

SHATALOVA, Irina Georgiyevna, kand. tekhn. nauk; GORBUNOV, Nikolay Stepanovich, prof., doktor khim. nauk; LIKHTMAN, Vladimir Iosifovich, prof. doktor fiz.-matem. nauk; REBINDER, P.A., akademik, otv. red.; CHERNYAK, A.L., red.

[Physicochemical principles of the vibrational compression of powdered materials] Fiziko-khimicheskie osnovy vibratsionnogo uplotneniia poroshkovykh materialov. Moskva, Nauka, 1965. 162 p. (MIRA 18:3)

1. Rukovoditel' Instituta fizicheskoy khimii AN SSSR (for Rebinder).

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

KONTOROVICH, S.I., SEKAIOVA, Ye.Ye., REBINDER, P.A., akademik

Use of the hydration solidification of magnesium oxide to increase the strength of a magnesium oxide catalyst. Dokl. AN SSSR. 159 no.1:189-191 N '64. (MIRA 17:12)

1. Institut fizicheskoy khimii AN SSSR i Moskovskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

VVEDENSKIY, B.A., glav. red.; VUL, B.M., glav. red.; SHTEYNMAN, M.Ya., zam. glav. red.; BALDIN, A.M., red.; VONSOVSKIY, S.V., red.; GALANIN, M.D., red.; ZEL'DOV, D.V., red.; ISHLINSKIY, A.Yu., red.; KAPITSA, P.L., red.; KAPTSOV, N.A., red.; KOZODAYEV, M.S., red.; LEVICH, V.G., red.; LOYTSYANSKIY, L.G., red.; LUK'YANOV, S.Yu., red.; MALYSHEV, V.I., red.; MIGULIN, V.V., red.; REBINDER, P.A., red.; SYRKIN, Ya.K., red.; TARG, S.M., red.; TYABLIKOV, S.V., red.; FEYNBERG, Ye.L., red.; KHAYKIN, S.E., red.; SHUBNIKOV, A.V., red.

[Encyclopedic physics dictionary] Fizicheskii entsiklopedicheskii slovar'. Moskva, Sovetskaia Entsiklopediia. Vol.4. 1965. 592 p. (MIRA 18:1)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

KELER, V.A., otv. red.; MILLIONSHCHIKOV, M.D., akademik, red.; BLOKHIN, M.N., red.; BLOKHINTSEV, D.I., red.; GNEDENKO, B.V., akademik, red.; ZAYCHIKOV, V.M., red.; KELDYSH, M.V., akademik, red.; KIRILLIN, V.A., akademik, red.; KORTUNOV, V.V., red.; MONIN, Andrey Sergeyevich, prof., doktor fiz.-matem. nauk, red. (1921); NESMEYANOV, A.N., akademik, red.; PARIN, V.V., red.; REBINDER, P.A., akademik, red.; SEMENOV, N.N., akademik, red.; FOK, V.A., akademik, red.; FRANTSOV, G.P., akademik, red.; ENGEL'GARDT, V.A., akademik, red.; KREMNEVA, G., red.; BALASHOVA, A., red.; BERG,A.I.,akademik,red.

[Science and mankind, 1964; simple and precise information about the principal developments in world science] Nauka i chelovechestvo, 1964.; dostupno i tochno o glavnom v mirovoi nauke. Moskva, Izd-vo "Znanie," 1964. 424 p. (MIRA 18:1)

1. Deystvitel'nyy chlen AMN SSSR (for Blokhin, Parin). 2. Chlen-korrespondent AN SSSR (for Blokhintsev). 3. Akademiya nauk SSSR Ukr.SSR (for Gnedenko).

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

S/0030/64/000/008/0028/0038

ACCESSION NR: AP4044575

AUTHOR: Rebinder, P. A. (Academician)

TITLE: New technique for the dispersion of materials (certain applications of the physicochemical mechanism)

SOURCE: AN SSSR. Vestnik, no. 8, 1964, 28-38

TOPIC TAGS: dispersion, vibration technology, vibration grinding, surface active substance, concrete, material stability

ABSTRACT: The secondary structure of materials may be controlled by not only chemical but also mechanical processes. Scientific study in this field has many practical applications in solving two problems of industry: 1) producing new substances from the synthesis of simpler ones; 2) the reworking of different substances into high-quality materials with predetermined properties. The stability of the dispersion structures is important in increasing the durability and the capacity of certain materials to be worked by pressing, grinding, and cutting. Since grinding fractures the crystals along their defects, the crystals are strongest when ground to a size of the same order as the spacing of their defects. Grinding to the size of 0.1 mm is practical on ordinary grinders, but for sizes 1 μ and smaller vibrational grinders must be used. A small addition of a surface active substance coats

Card 1/3

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

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ACCESSION NR: AP4044575

the crystals, hindering finer grinding. The additives operate by forming a monomolecular layer on the crystal. The durability of the material built up by cementing together small crystals depends not only on the crystal strength but also on the strength of the cementing bond. Vibration results in thinner, more complete coating of the cements and in a stronger bond. In concrete the use of vibrations (up to frequencies of 10 000 cpm) and of additives (sulfite waste liquor) greatly reduces the viscosity and increases the strength, especially for low water-cement ratios. A sand cement prepared with vibrating and additives has a compression strength of 1000 kg/cm^2 and a tensile strength of 100 kg/cm^2. This is still but a small fraction of the desired optimum, and further studies should be fruitful. These cements are not only more durable but cheaper (by 30% or more) and are useful in construction, producing thin-walled concrete pipe, etc. The use of vibration produces materials which may be worked at much lower pressures. In pressing iron powders the use of vibration and of oil-linked surface active additives has excellent effects. Thus, to reach a density of 4.4 g/cm^3 without vibration a static pressure of 1600 kg/cm^2 must be used, producing a specimen resistant to compressions of 4.5 kg/cm^2; to reach the same density using optimal vibrations only a pressure of 8 kg/cm^2 is needed, and the specimen is stable up to 23 kg/cm^2. With an additive,

Card 2/3

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

ACCESSION NR: AP4044575

a density of 4.7 g/cm^3 requires a pressure of 4000 kg/cm^2 without vibration--and with vibration, only 15.8 kg/cm^2. Orig. art. has: 4 figures.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00

SUB CODE: GC, MT NO REF SOV: 000 OTHER: 000

Card 3/3

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

KOTTSOVICH, S.I.; SEGALOVA, Yo.Yo.; REBINDER, P.A., akademik

Effect of [illegible]torng electrolytes on the rate of hydration of calcium oxide. Dokl. AN SSSR 157 no. 2:400-403 Jl '64. (MIRA 17:7)

1. Kafedra kolloidnoy khimii Moskovskogo gosudarstvennogo universiteta imeni Lomonosova i Institut fizicheskoy khimii AN SSSR.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

ACCESSION NR: AP4041148 S/0020/64/156/004/0799/0802

AUTHOR: Kanayev, A. A.; Veyler, S. Ya.; Rebinder, P. A.

TITLE: Elastico-kinetic phenomena associated with friction under conditions of plastic deformation of metals

SOURCE: AN SSSR. Doklady*, v. 156, no. 4, 1964, 799-802

TOPIC TAGS: elastic relaxation, drawing friction, plastic deformation, metal, pressure metal working, lubrication, cold metal working

ABSTRACT: The elastic relaxation (recovery) after pressing or drawing of metals is usually attributed to the elasticity of the working tools. However, the elastic recovery occurs even with rigid tools. The authors have previously shown that the recovery is affected by lubrication. The purpose of the present work was to obtain more information of the phenomena involved. Brass rods, partly hollow and partly solid, were pulled through a draw plate. The pulling was partway dry, and partway with a lubricant. It was found that elastic relaxation depends not only on the cold work of the surface layer of the specimen, but also on the uniformity of deformation of the inner layers. Lubrication decreases the tangential stress and

Card 1/2

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ACCESSION NR: AP4041148

increases the normal stress. The drawing under lubrication is not accomplished by elongation of the grains, but by pressure. Orig. art. has: 4 figures.

ASSOCIATION: Institut fizicheskoy khimii, Akademii nauk SSSR (Institute of Physical Chemistry, Academy of Sciences SSSR)

SUBMITTED: 10Jan64 ENCL: 00

SUB CODE: MM NO REF SOV: 005 OTHER: 001

Card 2/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

KUZNETSOVA, L.Ye.; SERB-SERBINA, N.N.; REBINDER, P.A., akademik

Some regularities in the consolidation of clay soils by the addition of synthetic aggregation agents and cation active substances as waterproofing agents. Dokl. AN SSSR 154 no.4: 933-935 F '64. (MIRA 17:3)

1. Institut fizicheskoy khimii AN SSSR.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

REBINDER, P.A., akademik; SHCHUKIN, Ye.D.; MARGOLIS, L. Ya.

Mechanical strength of porous disperse bodies. Dokl. AN SSSR 154 no. 3:695-698 Ja '64. (MIRA 17:5)

1. Institut fizicheskoy khimii AN SSSR i Institut khimicheskoy fiziki AN SSSR.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

GORYUNOV, Yu.V.; SUMM, B.D.; SHCHUKIN, Ye.D.; REBINDER, P.A., akademik

Role of kinetic factors in the reduction of metal strength by adsorption. Dokl. AN SSSR 153 no.3:634-637 N '63. (MIRA 17:1)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0014445

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001444

REBINDER, P.A., akademik, red.; BABALYAN, G.A., doktor tekhn. nauk, prof., red.; KRAVCHENKO, I.I., kand. tekhn. nauk, red.; KAYESHKOVA, S.M., ved. red.; YAKOVLEVA, Z.I., tekhn. red.

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